

AMENDMENT AND RESPONSE TO OFFICE ACTION
Application Serial No. 10/034,118

Remarks

Entry of the foregoing amendment and reconsideration of the subject application is respectfully requested. Claims 19, 24, 25, 29, 33, 55-58, 62, 63 and 71 (of which claims 19, 24, 25, 55-58, 62 and 63 are non-elected) have been canceled. New claims 75-77 have been added. Therefore, upon entry of the foregoing amendment, claims 1-18, 20-23, 26-28, 30-32, 34-54, 59-61, 64-70 and 72-77 remain pending in the subject application.

In the Office Action mailed November 29, 2002, the Examiner indicated claims 11-18, 35-51, 59-61, 64-67 and 72 allowable. Applicants thankfully acknowledge this indication of allowable subject matter. In addition, the Examiner indicated that dependent claims 29, 33 and 71 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, claims 29, 33 and 71 have been rewritten in independent form as new claims 75, 76 and 77, respectively. It is respectfully submitted that new claims 75-77 are now in condition for allowance, which action is earnestly solicited. Claims 29, 33 and 71 have, accordingly, been canceled.

Claims 1-5, 7-9, 20, 73 and 74- Rejection over Smith et al. in view of Rivers et al. under 35 U.S.C. §103(a)

Claims 1-5, 7-9, 20, 73 and 74 have been rejected under 35 U.S.C. §103(a) as allegedly being obvious over Smith et al. (U.S. Pat. No. 3,741,890) in view of Rivers et al. (U.S. Pat. No. 4,532,873). This rejection is respectfully traversed and withdrawal thereof is requested in view of the remarks below.

At the bottom of page 4 of the Office Action, and continuing to the top of page 5, the Examiner states:

Smith et al discloses applicant's invention substantially as claimed with the exception of coal. Rivers et al teaches coal (col. 4, lines

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21-27) for the purpose of using existing pulverized coal boilers with resultant fuel cost and capital savings. It would have been obvious to one of ordinary skill in the art to modify Smith et al by including coal as taught by Rivers et al for the purpose of using existing pulverized coal boilers with resultant fuel cost and capital savings.

Smith et al. is directed to a system and process for treating solid waste and waste water. Smith et al. discloses pyrolyzing shredded and dried solid waste in a pyrolyzer/gasifier to generate hot fuel gas and char. The hot fuel gas is combusted in a gas turbine to generate electrical power. The char generated from the pyrolyzer is combusted in a combustion chamber to generate the hot inert gases used in the pyrolyzer. Some of the active char from the pyrolyzer is used to adsorb contaminants from influent waste water. Lime generated by combustion of the char is used to clarify the waste water subsequent to treatment of the waste water with the active char. The floc obtained from the lime treatment is recycled to the pyrolyzer/gasifier. After treatment with the lime, the waste water is stripped with air in a cooling tower to remove ammonia. The cooling tower air containing the ammonia stripped from the waste water is recycled to the gas turbine. None of the gasifier/pyrolyzer, char combustor or gas turbine disclosed in Smith et al. is a coal burner of a coal burning power plant nor reasonably suggestive thereof.

Rivers et al. is directed to a system and process for heat recovery from wet wood waste ("hog fuel") or other biomass material. In particular, Rivers et al. discloses converting such organic waste into a fuel that burns in air suspension in a boiler *without the necessity for supplemental supporting fossil fuels*. The Examiner cites col. 4, lns. 21-27 of Rivers et al. This paragraph merely discloses that the existing hog fuel boilers having grates, pulverized coal burners or utility boilers may be retrofitted to accommodate burning of the dried and pulverized organic wastes. This passage does not suggest combining the organic waste with fossil fuels

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such as coal. In fact, Rivers et al. fairly suggests avoiding the use of fossil fuels because of the increasing cost thereof. Therefore, Rivers et al. teaches away from the combination of fossil fuels such as coal with organic waste.

Claims 1-5 of the subject application require, *inter alia*, a step of mixing organic waste, one or more coal-combustion by-products and one or more alkaline additives to form a mixture. Neither Smith et al. nor Rivers et al. discloses such a step. In fact, neither of these references, upon a fair reading thereof, is directed to coal combustion, or the use of any by-product of coal combustion in combination with organic waste. Smith et al. is directed to producing fuel gas by pyrolyzing organic waste and utilizing by-products of that process to treat waste water. Pyrolyzing organic waste as disclosed in Smith et al. does not involve use of a coal burner and by-products of this process are thus not "coal combustion by-products" as recited in claims 1-5. Similarly, Rivers et al. is directed to the use of organic materials as alternative energy sources to fossil fuels. The Rivers et al. process does not generate or use any coal combustion by-product. Thus, ^{Smith et al. does not} Rivers et al. does not fairly suggest mixing a coal combustion by-product with organic waste.

As neither Smith et al. nor Rivers et al., nor the combination thereof, fairly teaches mixing a coal combustion by-product with organic waste, it is respectfully submitted that such combination does not suggest liberation of ammonia upon mixing a coal combustion by-product ~~and organic waste~~, and certainly does not teach introducing the liberated ammonia into a coal burner of a coal burning power plant, as also recited in claims 1-5. While Smith et al. discloses removal of ammonia from waste water, such ammonia is removed by air stripping of waste water and is not liberated by mixing of organic waste with a coal combustion by-product/alkaline additive. Moreover, the air containing the stripped ammonia is fed to a gas turbine as opposed to a coal burner of a coal burning power plant.

It is respectfully submitted, in view of the foregoing, that claims 1-5 are not rendered

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obvious by the combination of Smith et al. in view of Rivers et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claims 7-9 depend either directly or indirectly from independent claim 1, discussed above, and are therefore allowable at least by virtue of their dependency from claim 1.

Claim 20 is similar to claim 1, but does not require the step of liberating ammonia and feeding the liberated ammonia to the coal burner of a coal burning power plant. However, claim 20 nonetheless recites mixing organic waste, one or more coal combustion by-products and one or more alkaline additives and feeding such mixture to a coal burner of a coal burning power plant. As discussed above, neither Smith et al. nor Rivers et al. teaches mixing organic waste with a coal combustion by-product. As such, neither Smith et al. nor Rivers et al. teaches the further step of feeding such mixture to a coal burner of a coal burning power plant. Therefore, it is respectfully submitted that claim 20 is not rendered obvious by the combination of Smith et al. and Rivers et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claim 73 is directed to liberating ammonia from organic waste and introducing such liberated ammonia into a coal burner of a coal burning power plant. Neither Smith et al. nor Rivers et al., nor the combination thereof, teaches liberation of ammonia from organic waste. Smith et al. teaches air stripping of ammonia from waste water and introducing the air containing the stripped ammonia into a gas turbine. There is no disclosure or suggestion provided by Smith et al. that such ammonia can be introduced into a coal burner of a coal burning power plant. Moreover, as Rivers et al. is silent with respect to the generation of ammonia, Rivers et al. does not address the deficiencies of Smith et al. in this regard. Further, it is respectfully submitted that air stripping of ammonia from waste water does not reasonably suggest liberation of ammonia from organic waste as recited in claim 73. Therefore, it is respectfully submitted that claim 73 is not rendered obvious by the combination of Smith et al. in view of Rivers et al.

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Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claim 74 recites mixing organic waste with one or more coal combustion by-products and causing ammonia to be liberated, and introducing the liberated ammonia into a coal burner of a coal burning power plant. As discussed above, neither Smith et al. nor Rivers et al., nor the combination thereof, teaches or suggests mixing organic waste with a coal combustion by-product, and neither teaches or suggests that ammonia liberated from such mixture may be introduced into a coal burner of a coal burning power plant. Therefore, it is respectfully submitted that claim 74 is not rendered obvious by the combination of Smith et al. in view of Rivers et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claim 26—Rejection over Lissianski et al. in view of Smith et al. under 35 U.S.C. §103(a)

Claim 26 has been rejected under 35 U.S.C. §103(a) as allegedly being obvious over Lissianski et al. (U.S. Pat. No. 6,280,695 B1) in view of Smith et al. This rejection is respectfully traversed and withdrawal thereof is requested in view of the remarks below.

Lissianski et al. teaches a method for reducing nitrogen oxides (NOx) in combustion gas by contacting the combustion gas with a selective reducing agent such as ammonia. As the Examiner notes, Lissianski et al. fails to teach or suggest that the ammonia is liberated upon mixing of organic waste with a coal combustion by-product and alkaline additive as recited in claim 26. The Examiner maintains that Smith et al. teaches liberation of ammonia in this manner and that it would, therefore, be obvious to use such ammonia in Smith et al. in the process of Lissianski et al. As discussed hereinabove, Smith et al. does not teach or suggest mixing a coal combustion by-product with organic waste, let alone the liberation of ammonia by such mixing. Indeed, Smith et al. does not even teach combustion of coal, let alone use of a by-product of such combustion. Smith et al. discloses air stripping of ammonia from waste water. It is respectfully submitted that air stripping of ammonia from waste water by contacting the waste water with air,

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as disclosed in Smith et al., does not reasonably suggest liberation of ammonia from organic waste by contact thereof with a coal combustion by-product, as recited in claim 26. Therefore, it is respectfully submitted that claim 26 is not rendered obvious by the combination of Lissianski et al. and Smith et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claims 52 and 68– Rejection over Lissianski et al. in view of Khan under 35 U.S.C. §103(a)

Claims 52 and 68 have been rejected under 35 U.S.C. §103(a) as allegedly being obvious over Lissianski et al. in view of Khan (U.S. Pat. No. 5,234,468). This rejection is respectfully traversed and withdrawal thereof is requested in view of the remarks below.

Applicants note that the Examiner states that claims 52 and 68 are rejected over Lissianski et al. in view of Khan but, in the discussion of this rejection in the Office Action, the Examiner refers to Smith et al. (discussed above). Applicants confirmed with the Examiner, during a telephone conversation on January 21, 2003, that the rejection is based on the combination of Lissianski et al. (not Smith et al.) in view of Khan.

Claim 52 is directed to a process comprising mixing organic waste and one or more coal combustion by-products to form a mixture, and feeding that mixture to a coal burner of a coal burning power plant. Claim 68 is directed to a system for carrying out such process.

Lissianski et al., as discussed above, is directed to the removal of nitrogen oxides from combustion gas by contacting the combustion gas with a selective reducing agent. Lissianski et al. does not teach or suggest organic waste, let alone mixing organic waste with a coal combustion by-product and feeding that mixture to a coal burner of a coal burning power plant. Khan discloses a process for generating a pumpable slurry of sewage sludge and burning the slurry in a partial oxidation gasifier, furnace, boiler or incinerator to produce an effluent gas stream. Khan also discloses that fly ash recovered in the effluent gas stream may be recycled to the sewage sludge slurry fed to the combustion apparatus. Khan does not teach combustion of

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coal, and therefore, does not teach any coal combustion, by-product, per se. Therefore, the fly ash recovered from the effluent gas in the process of Khan is not a "coal combustion by-product" as recited in claims 52 and 68. Thus, neither Lissianski et al. nor Khan, nor the combination thereof, fairly teaches or suggests mixing of a coal combustion by-product with organic waste and feeding that mixture to a coal burner of a coal burning power plant as recited in claims 52 and 68. Accordingly, it is respectfully submitted that claims 52 and 68 are not rendered obvious by the combination of Lissianski et al. and Khan. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claims 21, 22, 30-32, 52-54 and 68-70– Rejection over Strohmeyer in view of Lissianski et al. under 35 U.S.C. §103(a)

Claims 21, 22, 30-32, 52-54 and 68-70 have been rejected under 35 U.S.C. §103(a) as allegedly being obvious over Strohmeyer (U.S. Pat. No. 4,462,341) in view of Lissianski et al. This rejection is respectfully traversed and withdrawal thereof is requested in view of the remarks below.

Each of rejected claims 21, 22, 30-32, 52-54 and 68-70 recites, *inter alia*, mixing organic waste and a coal combustion by-product and feeding that mixture to a coal burner of a coal burning power plant. Such step is not disclosed in either Strohmeyer or Lissianski et al. and is not suggested by the combination of these references.

The Examiner cites col. 5, lines 23-29 of Strohmeyer in support of the proposition that Strohmeyer discloses mixing of organic waste with one or more coal combustion by-products. The passage cited by the Examiner discloses that solid particles may be recycled to the combustor. It is respectfully submitted that such "solid particles" are not a coal combustion by-product as described in the instant specification at p. 7, paragraph [025]. Strohmeyer discloses that fly ash generated from the combustion process (which may involve combustion of coal as

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a fuel) is "removed on a continuous basis to maintain equilibrium in the combustion system."

It is respectfully submitted that this passage in Strohmeyer does not suggest combining the fly ash, to the extent that it would be considered a "coal combustion by-product," with the influent waste (disclosed at col. 3, lns. 5-10 of Strohmeyer) and, in fact, teaches against combining the fly ash with influent waste as this would tend to cause accumulation of fly ash in the system, and not maintain equilibrium. Lissianski et al. is discussed hereinabove, and does not teach combining organic waste with a coal combustion by-product.

Thus, neither Strohmeyer nor Lissianski et al. alone, or in combination, teaches combining organic waste with a coal combustion by-product and feeding that mixture to a coal burner of a coal burning power plant. Accordingly, it is respectfully submitted that claims 21, 22, 30-32, 52-54 and 68-70 are not rendered obvious by the combination of Strohmeyer and Lissianski et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Claims 1, 6, 8-10, 21-23, 26-28 and 34– Rejection over Strohmeyer in view of Smith et al. and Lissianski et al. under 35 U.S.C. §103(a)

Claims 1, 6, 8-10, 21-23, 26-28 and 34 have been rejected under 35 U.S.C. §103(a) as allegedly being obvious over Strohmeyer in view of Smith et al. and Lissianski et al. This rejection is respectfully traversed and withdrawal thereof is requested in view of the remarks below.

Each of Strohmeyer, Smith et al. and Lissianski et al is discussed herein above.

Claim 1 and claims 6 and 8-10 (which depend either directly or indirectly from claim 1) recite, *inter alia*, mixing organic waste with one or more coal combustion by-products and one or more alkaline additives thereby liberating ammonia from the organic waste, and introducing

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the ammonia into a coal burner of a coal burning power plant.

None of Smith et al., Strohmeyer or Lissianski et al., alone or in combination, teaches or suggests mixing organic waste with a coal combustion by-product to liberate ammonia, or feeding of such ammonia to the coal burner of a coal burning power plant. Strohmeyer, as discussed above, does not teach mixing of organic waste with a coal combustion by-product. Strohmeyer, in fact, teaches away from doing this by disclosing that the fly ash is removed from the combustion system to maintain equilibrium. Moreover, Strohmeyer does not teach or suggest liberation of ammonia by mixing organic waste and a coal combustion by-product and certainly does not teach that such liberated ammonia may be fed to the coal burner of a coal burning power plant.

The combination of Smith et al. and Lissianski et al. does not alleviate the deficiencies in Strohmeyer.

Smith et al., as discussed above, is directed to production of fuel gas from solid waste by pyrolyzing the solid waste to produce fuel gas which is then sent to a gas turbine. Smith et al. does not teach or suggest anything regarding combustion of coal or the mixing of a coal combustion by-product with organic waste. Char is a by-product produced by pyrolyzing the solid waste and, therefore, is not a coal combustion by-product. The char is used to adsorb contaminants from waste water. It is not mixed with organic waste to generate ammonia. Smith et al. discloses that ammonia may be produced by stripping waste water with air, and that the air/ammonia is fed to the gas turbine. Air stripping of ammonia from waste water does not reasonably suggest liberation of ammonia from organic waste by contacting the organic waste with a coal combustion by-product and an alkaline additive. As Smith et al. does not reasonably

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suggest combustion of coal, or a coal burning power plant, it is respectfully submitted that Smith et al. would not reasonably suggest feeding the air/ammonia to a coal burner of a coal burning power plant.

Lissianski et al. teaches addition of a selective reducing agent to a combustion gas to reduce nitrogen oxides. There is no teaching or suggesting in Lissianski et al. of combining organic waste and a coal combustion by-product to generate the ammonia.

In view of the foregoing, it is respectfully submitted that none of Strohmeyer, Smith et al., or Lissianski et al., or any combination thereof, renders obvious any of claims 1, 6 and 8-10.

Claims 21-23 are similarly patentable over the combination of Strohmeyer, Smith et al. and Lissianski et al. Each of these claims recites, *inter alia*, a step of mixing organic waste/coal combustion by-product and one or more alkaline additives, combining this mixture with coal and feeding the combination with coal to a coal burner of a coal burning power plant.

As discussed above, Smith et al. is not concerned with coal burning or coal burning power plants. Lissianski et al. is directed to treating nitrogen oxides in combustion gas with a selective reducing agent. Lissianski et al. fails to teach or suggest combining organic waste with a coal combustion by-product. Similarly, Strohmeyer et al. teaches away from combining organic waste with a coal combustion by-product, by disclosing that the fly ash is removed from the combustion system to maintain equilibrium. None of these references, alone or in combination, teaches or suggests feeding a mixture of coal/organic waste/coal combustion by-products/alkaline additive to a coal burner of a coal burning power plant.

In view of the foregoing, it is respectfully submitted that none of Strohmeyer, Smith et al., or Lissianski et al., or any combination thereof, renders obvious any of claims 21-23.

Claim 26-28 are directed to a system comprising a coal burner of a coal burning power plant, a coal feed supplying coal to said coal burner and an ammonia feed to the coal burner

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comprising ammonia liberated from organic waste upon mixing organic waste, one or more coal combustion by-products and one or more alkaline additives. As discussed above, none of Strohmeyer, Smith et al. or Lissianski et al. teaches or suggests combining organic waste with a coal combustion by-product, let alone that such combination will liberate ammonia, and then feeding the ammonia to a coal burner of a coal burning power plant.

Smith et al. teaches generation of ammonia by air stripping of waste water, which does not teach or suggest liberation of the ammonia by contacting organic waste with a coal combustion by-product. Moreover, the air/ammonia in Smith is fed to a gas turbine, which does not reasonably suggest feeding ammonia to a coal burner of a coal burning power plant. While Lissianski et al. discloses that ammonia can be used to reduce nitrogen oxides in a combustion gas, there is no teaching or suggestion in Lissianski that such ammonia can be derived from mixing organic waste with a coal combustion by-product. Strohmeyer et al. teaches away from combining a coal combustion by-product with organic waste by disclosing that the fly ash in the combustion gas is removed, rather than combined with the influent waste matter.

In view of the foregoing, it is respectfully submitted that none of Strohmeyer, Smith et al., or Lissianski et al., or any combination thereof, renders obvious any of claims 26-28.

Claim 34, like claims 26-28, also requires an ammonia feed to a coal burner, wherein the ammonia is liberated by mixing organic waste with one or more coal combustion by-products, and a coal feed comprising coal, the mixture of organic waste with one or more coal combustion by-products and one or more alkaline additives.

For the reasons discussed in detail above, it is respectfully submitted that none of Strohmeyer, Smith et al. or Lissianski et al, or any combination thereof, renders obvious claim 34, at least because these references do not teach or suggest combining organic waste with a coal combustion by-product to liberate ammonia, feeding the liberated ammonia to a coal burner of a coal burning power plant, and feeding a combination of coal/organic waste/one or more coal

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combustion by-products/one or more alkaline additives to the coal burner of a coal burning power plant.

Accordingly, it is respectfully submitted that claims 1, 6, 8-10, 21-23, 26-28 and 34 are not rendered obvious by the combination of Strohmeyer in view of Smith et al. and Lissianski et al. Reconsideration and withdrawal of this ground of rejection is, therefore, respectfully requested.

Conclusion

It is respectfully submitted that the foregoing amendment and remarks places the subject application in condition for allowance, which action is earnestly solicited.

Upon consideration of this response, the Examiner is encouraged to contact Applicants' representative at the telephone number below to discuss any issue that would expedite allowance of the subject application.

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The Commissioner is further authorized to charge any additional fees or surcharges, or credit any overpayments associated with this paper or the application itself to Deposit Account No. 11-0600.

Respectfully submitted,
KENYON & KENYON

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Neil M. McCarthy
Neil M. McCarthy
Reg. No. 43,435

1500 K Street, N.W.
Washington, D.C. 20005
Tel: (202) 220-4365
Fax: (202) 220-4201
DC439526v1